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SOME ECOLOGICAL CHARACTERISTICS OF THE BIRD STOCK OF TŐSERDŐ

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Abstract

The 8-member research team of the Tisza-Research Working Committee performed regular ecological investigations into the bird-stock of the Tisza Dead-Arm at Lakitelek and the adjacent flood-plain Tős-erdő in the area of the National Park in Kiskunság, in 1976.

The most characteristic nesters of the aquatic ecosystems proved to be the following: *Podiceps ruficollis, Anas platyrhynchos, Aythya nyroca; Gallinula chloropus, Fulica atra.* The terrestrial ecosystems, on the other hand, are characterized by the bird species *Locustella fluviatilis, Luscinia megarhynchos, Sylvia atricapilla, Parus major, Certhia brachydactyla, Turdus, merula, Sturnu vulgaris, Passer montanus, Fringilla coelebs, Picus viridis, Dendrocopos major.*

The vertical distribution of bird's nests between 0.2 m and 10 m can be observed well. The bird species have not been specialized for plant species or plant associations in respect of placing the nests. The flight opening of the nest-hole looks to different quarters of the heavens.

Introduction

In 1976, in the area of the National Park of Kiskunság, in the flood-plain Tőserdő bordering on the Tisza Dead-Arm at Lakitelek and the natura lwaters belonging to that, a systematical fact-finding investigation was started, planned for two years, by an eight-member research team organized for this purpose by the Tisza-Research Working Committee. In addition to the authors of this paper, the members of this team were also LEVENTE MAGYAR, GYULA MOLNÁR, LAJOS PUSKÁS, LÁSZLÓ SALAMON. While in 1976 the emphasis was placed on collecting and evaluating the faunal, ecological and fenological data — now we want to report on the effect of the ecological factors considered as the most considerable from among these — in 1977, in continuing the work, our aim will be the quantitative investigation into the bird-stock

The investigated area and method

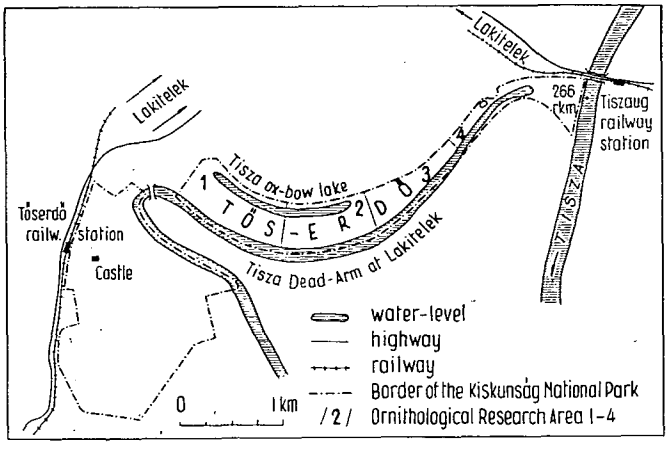
The investigated area is the Dead-Tisza and the "Carcass"-Tisza at Lakitelek, between them the flood-plain Tőserdő and meadow, lying in about five km length on the confines of Lakitelek. This is about 100 ha, of which 88 ha fall to the forest Tős-erdő (sketch-map 1).

The smaller part of the forest is the willow-poplar wood, familiar in the flood-plains of the Hungarian Great Plain *(Salix alba, Populus canescens* and *Populus nigra, Salicetum albae-fragilis,* a major part being *Populus canescens, Populus nigra,* and *Populus robusta)*, as well as a mixed stand

(Alnus glutinosa, Robinia pseudo-acacia, Populus canescens and *Populus nigra, Fraxinus anngustifolia)*. The Italian poplar plantations lie in large spots. A considerable value of the area is the 3.5 ha old, peduncular oak-forest *(Quercus robur)*.

The underwood is dense in the whole forest, in some places it is impenetrable *(Amorpha fruticosa, Crataegus* sp., *Cornus sanquinea, Rubus caesius, Urtica dioica, Aristolochia clematitis)*. *Vitis riparia*, lying on the soil in a very large area, in the form of a dense creeper, or overgrowing the trees entirely, grows in profusion.

The investigations were performed by the members of the team in the area divided into four fact-finding districts, walking two and two. Partly they were working all the eight at an identical date, partly they were active — anybodyinh is own sector — at a freely chosen date. Surveyings were organized, in nesting season, with a monthly, weekly resp. fortnightly frequency.



Sketch map 1. The Tős-erdő
(1) Water surface. (2) Roadway. (3) Railway. (4) Boundary of the National Park of Kiskunság. (5) Area of the ornithological investigations 1 to 4.

The result of investigation

It was ascertained in the presence of 105 bird species that 44 of these species have nested in the area (Table 2). In the following we are examining the effect of some environmental factors regulating the essential conditions of the nesters.

Birds get, as generally the living beings, into a close connection with their environment by means of the processes, resp. possibilities of subsistence (nourishment, possible protection from the effects of weather) and propagation (presence of a suitable nesting site and nesting material). There is also to be mentioned here a third factor, the man, whose activity may be of decisive importance for the development of the bird stock in our culture areas. Investigating the ecosystems of the area from a point of view like this, the following facts can be set down.

In the *aquatic ecosystem* the following characteristic types of the biotope may be found:

1. The so-called "Carcass"-Tisza is a 1.5 km long, narrow and shallow, age-worn dead-bed of the Tisza. It is, in fact, a white water-lily (*Nymphaeetum*)-covered sedge- and reed-bordered marshland, with a few stunded common alders and willows at its bank.

A large amont of vegetal and animal organic food is concentrated here but, owing to the water becoming shallow and a part of the pool extinct in summer, the continuous feeding of birds and their youngs is not ensured. Therefore, even if some opportunity to nest is provided by the vegetation of the riverside zone, there are nut very few species hatching here. The less advantageous ecological conditions are still more increased by the disturbing anthropogeneous effect. One side of the narrow water ribbon is connected with an agricultural area, the other side with a meadow and a regular communication road on it.

The hatching of not more than four species, nesting in the sedgy, resp. reeds *(Gallinula chloropus, Ixobrychus minutus, Acrocephalus arundinaceus,* and *Acrocephalus schoeonobaenus)* was established here. These species, at any rate, are characteristic not only of the "Carcass"-Tisza but also of the more and more shrinking, vegetation-covered small waters. Several bird species belonging to the orders Anseriformes, Gruiformes, Charadriiformes, and even Passeriformes come here on transient residence in order to take nourishment. The low species and individual numbers are characteristic of these, as well.

2. The small forest bog developing in the NW corner of the Tős-erdő is very interesting. Below the middle-aged peduncular oak and common alder woods, a sedge- and algal reed-grass-covered water-surface lies, with a standing water of a few rooms size and in many places polluted by iron hydroxide to be brown. Gallinula chloropus has hatched here, even in spite of the poor food.

3. The Dead-Tisza at Lakitelek is a 5 km long, 45—50 m broad Tisza Dead-Arm of open water. Its riverside is bordered with a willow-poplar, pollard--willow or poplars and sedgy-bulrush. Its water, in many places full of floating hair--weed, is in connection with the "living" Tisza by means of a canal. And in the time of high floods, it is fully refreshed with Tisza water. It follows from this that it yields a rich animal (fish, amphibian, water-insect) and vegetal food to birds.

From among the species characteristic of the water biotope of the dead arm, Anas platyrhynchos hatches in the largest number. With its nesting way, it adapted itself to the changing water surface: Its nest can be found in the aspen leaf-litter of the higher riverside in just the same way as in the 2 m high willow hole and even in a 4 m height, on a ramified branch of a willow.

By the dead arm rich in floating heir-weed, a considerable number of *Aythya nyroca* are sustained, living overwhelmingly on vegetal organisms. In some sections of the riverside they nest in an almost loose habitat. In an about 300 m long stretch 12 nests have been counted.

At high water, the nest of *Fulica atra* made of the basic material bulrush was also built here on a willow-bush standing in water. There were found some nests being 80 cm over the ground level after the flood had passed.

The typical species of the dead arm at Lakitelek are also: *Podiceps ruficollis, Ardea cinerea, Nycticorax nycticorax, Larus ridibundus, Chlidonias niger.*

The life of the bird population of the ox-bow lake is more or less disturbed by the several anglers, being active from anglers, camps, boats in the protected area almost in every part of the day.

The terrestrial ecosystem contains the biotopes of meadow and forest.

1. The meadowland is hardly suitable for the nesting of birds because of mowing there two-three times a year and of the tourists hiking on the road passing through it.

2. In the substance of Tős-eredő, there are to be found all the levels characteristic of the forests in the flood-plains of the Southern Great Plain.

From the species living at the litter and weed level and following a terricolous way of life, *Phasianus colchicus* lays its eggs on the earth, among runners of brambles and birthworts, exposing these to the devastation of flood. The nest of Locustella fluviatilis was, however, found on the branch litter accumulated on the soil, choosing the high place certainly owing to the wet soil.

The species of arboricolous way of life, dwelling at bush-level, find plenty, of nesting possibilities in the dense thorn-bush, bramblem dwarf-acacia underwood.

In the flood-plain woods of wet soil, often under water, the fallen treetrunks have particular importance. Thenest of *Luscinia megarhynchos* was found the branches of storm-felled willows, 20 cm high from the soil. *Caprimulgus euaropaeus* also nests in a similar place.

At trunk level, from among the nesters, particularly the nest location of the hole-dwelling species was studied.

There were investigated 36 nests of eight hole-dwelling species *(Upupa epops, Dendrocopos maior, D. minor, Parus maior, P. coeruleus, Phoenicurus phoenicurus, Sturnus vulgaris, Passer montanus)*. It was established that:

1. The species making or forming the hole themselves, as those belonging to the Piciformes ordo, hollow their nest-holes both in soft- and hardwood.

2. The hole suitable for nesting is occupied by the bird even if its opening for taking flight does not get any sunlight. Holes looking on to east, south and north have been observed. (Table 1).

The vertical distribution of the nesting of the bird stock in the forest of the country can be observed well. The nests of the species nesting at tree-trunk and crown levels are placed in most different heights. Lowest (0.2 m) is found the nest of *Parus coeruleus*, highest (10 m) that of *Corvus cornix* (Table 1).

The nest placing of 26 arboricolous bird nests was investigated on 14 plant species, in 83 cases. *Concerning nest placing, no specialization in plant species or plant associations is to be ascertained* (Table 1).

Our work — we think — is not only serving the basic researches of the ecosystems along the Tisza, and fixing some ecological data in respect to the natural values of our country but it is also of use for the nature conservancy and forestry practice.

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Table 1. *Distribution of nests according to plant species and their height over the ground surface*

Plant species	Bird species	Height (m)
Ash	*Chloris chloris*	2
	Turdus merula	3
	Sylvia atricapilla	2, 3
Oak	*Parus coeruleus*	0,8,1,5,10
	Upupa epops	0,35
	Corvus cornix	18—20
	Sturnus vulgaris	5
	Sylvia atricapilla	
	Passer montanus	5
	Coccothraustes coccothraustes	10
	Columba palumbus	2,5
Elm	*Sturnus vulgaris*	4
	Turdus merula	1
Poplar	*Sturnus vulgaris*	2, 5, 6 (N)
	Dendrocopos maior	1.5, 2, 4, 5 (S)
	Dendrocopos minor	6
	Streptopelia decaocto	3
	Turdus merula	2,2
	Sylvia atricapilla	1.2
	Hippolais icterina	5
	Turdus philomelos	0,5, 1.5, 1.6, 2
	Fringilla coelebs	2, 5, 3
	Chloris chloris	7
Willow	*Chloris chloris*	4
	Streptopelia decaocto	2.5
	Aegithalos caudatus	2, 3
	Turdus merula	1,1,1, 2,2,2
	Lanius collurio	1.5
	Luscinia megarhynchos	0.2
	Anas paltyrhynchos	4, 4 (hole)
	Passer montanus	2.5, 3, 4
	Parus coeruleus	0.2, 0.5
	Phoenicurus phoenicurus	2, 5, 3
	Dendrocopos maior	3, 3 (S), 3, 4, 6 (S), 6 (E)
	Parus maior	1, 2
Wild pear	*Turdus merula*	3
	Fringilla coelebs	3, 2
Thornbush	*Carduelis carduelis*	2
	Sylvia atricapilla	3
Nettle	*Phasianus colchicus*	on the soil
Poplar	*Corvus cornix*	8, 10, 12
	Fringilla coelebs	3
	Streptopelia decaocto	3, 5
	Caprimulgus europaeus	on the soil, on fallen trees
	Phasianus colchicus	on the soil
Dwarf acacia	*Hippolais icterina*	2
	Phasianus colchicus	on the soil
	Luscinia megarhynchos	on the soil, on drift-wood
Riverside vine		
Riverside vine texture	*Turdus philomelos*	2.5
	Luscinia megarhynchos	
	Sylvia atricapilla	
	Erithacus rubecula	
Water-lily hair-weed	*Gallinula chloropus*	at water-surface
Reed-sedge	*Gallunila chloropus*	1, 1, 1 at water-surface
	Ixobrychus minutus	1, at water-surface
Runners of brambles	*Phasianus colchicus*	on the soil

N=north S=south E=east: direction of the hole openings

Table 2. *Picture of the fauna*

Species		Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Podiceps ruficollis	P												
Ardea cinerea	P												
Ardea purpurea	P												
Ardeola ralloides	P												
Egretta alba	P												
Nycticorax nycticorax	N												
Ixobrychus minutus	N												
Ciconia ciconia	P												
Anser albifrons	P												
Anser fabalis	P												
Anas platyrhynchos	N												
Aythya nyroca	N												
Accipiter nisus	P												
Buteo buteo	P												
Circus aeruginosus	P												
Falco subbuteo	P												
Falco tinnunculus	P												
Perdix perdix	P												
Phasianus colchicus	N												
Gallinula chloropus	N												
Fulica atra	N												
Vanellus vanellus	P												
Tringa ochropus	P												
Larus canus	EV												
Lanus ridibundus	P												
Chlidonias hybrida	P												
Chlidonias niger	P												
Columba palumbus	N												
Streptopelia turtur	N												
Streptopelia decaocto	N												
Cuculus canorus	P												
Athene noctua	P												

N = Nesting P = Passinng migratory species WV = Winter visitor EV = Extraordinary visitor

Table 2

Species		Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Strix aluco	P												
Asio otus	P												
Caprimulgus europaeus	N												
Alcedo atthis	P												
Upupa epops	N												
Jynx torquilla	P												
Picus viridis	N												
Picus canus	N												
Drycocopus martius	N												
Dendrocopos maior	N												
Dendrocopos syriacus	P												
Dendrocopos minor	N												
Lullula arborea	P												
Alauda arvensis	P												
Hirundo rustica	P												
Delichon urbica	P												
Riparia riparia	P												
Oriolus oriolus	N												
Corvus cornix	N												
Corvus frugilegus	P												
Coloeus monedula	N												
Pica pica	P												
Garrulus glandarius	N												
Parus maior	N												
Parus caeruleus	N												
Aegithalos caudatus	N												
Certhia brachydactyla	N												
Troglodytes troglodytes	N												
Turdus pilaris	WV												
Turdus philamelos	N												
Turdus iliacus	P												
Turdus merula	N												

Table 2

Species		Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Phoenicurus phoenicurus	N												
Luscinia megarhynchos	N												
Erithacus rubecula	N												
Locustella fluviatilis	N												
Acrocephalus arundin.	N												
Acrocephalus schoenob.	N												
Hippolais icterina	N												
Sylvia atricapilla	N												
Sylvia nisoria	P												
Sylvia borin	P												
Sylvia communis	P												
Phylloscopus trochilus	N												
Phylloscopus collybita	P												
Phylloscopus sibilatrix	P												
Regulus regulus	P												
Muscicapa striata	P												
Muscicapa hypoleuca	P												
Muscicapa albicollis	P												
Prunella modularis	P												
Anthus trivialis	P												
Motacilla alba	P												
Motacilla cinerea	WV												
Motacilla flava	P												
Lanius excubitor	WV												
Lanius minor	P												
Lanius collurio	N												
Sturnus vulgaris	N												
Passer domesticus	P												
Passer montanus	N												
Coccothraustes coccoth.	N												
Chloris chloris	N												
Carduelis carduelis	N												

Table 2

Species		Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Carduelis spinus	P	—	—	—	—								—
Carduelis flavirostris	WV	—	—										—
Serinus serinus	WV	—	—	—	—								
Pirrhula pirrhula	WV	—	—	—									—
Fringilla coelebs	N	—		—	—	—	—	—					—
Fringilla montifringilla	P			—	—								—
Emberiza citrinella	WV	—		—									—
Emberiza calandra	P				—								
Emberiza schoeniclus	P			—									